

REMARKS/ARGUMENTS

In this Action, made final, the Examiner repeated the previously-made rejections of all claims under 35 U.S.C. §103(a) over Kalavade et al. and over Kalavade et al. in view of Pena-Nieves et al. Applicant again traverses these rejections, on the same grounds as were presented in the prior responses to these rejections.

In responding to applicant's argument that "Kalavade...only use[s] the probability that a task completes its execution by its deadline to evaluate the performance of different scheduling policies," the Examiner stated that "to say that Kalavade does not contemplate using these probabilities to improve scheduling or as an admission control is simply untrue." The Examiner's statement is, at best, misleading. Kalavade et al. use their disclosed methods and apparatus to improve scheduling policies only in the sense of evaluating different scheduling policies to identify the scheduling policy that is best for the target application(s). But they do not use their methods and apparatus as a scheduling policy or as a part of a scheduling policy. (See, for example, col. 3, lines 31-34 ("the methods and apparatus of the invention provide an efficient analytical approach to evaluate the impact of running scheduling policies on the performance of applications"); col. 4, lines 9-13 ("By allowing the designer to experiment with different run-time schedulers, the methods and apparatus of the invention provide a framework for systematically quantifying their effect on the performance of the applications and on the end-system."); and col. 5, lines 26-32 ("given...a run-time scheduler policy as input data, the methodology 200 includes:...computing performance metrics")).

As concerns "admission control," Kalavade et al. state that "admission control techniques are used to determine the feasibility of an application set" (col. 4, lines 42-44). So in the parlance of Kalavade et al., "admission control" is not a technique for scheduling tasks, but a technique for evaluating whether a system is capable of performing the

desired tasks. And, indeed, the methodologies presented by Kalavade et al. are used to give insight into the operation of a system (col. 5, lines 3-5), not to control the operation of the system. In other words, to the extent that the Examiner is referring to “admission control” in Kalavade et al. as evidence that Kalavade et al. use their methods and apparatus to schedule tasks, the Examiner is mistaken.

Nevertheless, even if one were to assume for purposes of argument that everything that the Examiner said is true, the fact would still remain that Kalavade et al. do not disclose, teach, or suggest determining a probability of each of a plurality of resources being available at a point in time, combining those future probabilities, and using the result to schedule new tasks for that point in time, as required by applicant’s independent claims 1, 20, 21 and claims dependent therefrom.

That use of statistics and probabilities to determine resource availability is well known in the art, as pointed out by the Examiner, is irrelevant. Applicant is not claiming the concept of using statistics and probabilities to determine resource availability. Determining the availability of resources is but one element of applicant’s claimed invention. The claimed invention is a combination of that element with the other recited claim elements. The claimed combination is not disclosed, taught or suggested by the references identified by the Examiner, and hence the combination is not rendered obvious thereby. The fact that one element of the combination is known does not render the combination as a whole obvious.

With respect to applicant’s argument that “the claimed invention computes the probabilities of multiple resources being available at the same one future point,” the Examiner stated that “The claims, as presently worded, do not support applicant’s argument.” Applicant fails to see how this can be so. Nevertheless, in order to emphasize this point and make it

more definite, applicant has amended independent claims 1, 20, and 21 by using different phrase structure to say the same thing as before.

In view of the above remarks and amendments, applicant suggests that the Section 103(a) rejection of claims 1-5, 20, and 21 has been overcome. Applicant therefore requests that this rejection be withdrawn.

Applicant's claims 6, 22, 42, and claims dependent therefrom are directed to determining a probability that is used for scheduling a task for servicing. As was explained above, Kalavade et al. have no such teaching. Claims 6, 22, and 42 recite "determining a probability F(t) of the resource completing servicing the task by now," where the first claim element indicates that "now" is a time at which a resource has been servicing a task for an amount of time t. Kalavade et al. do not determine a probability of a resource completing servicing a task by "now." At each time during execution of applications, Kalavade et al. merely consider whether or not a task has finished execution; they do not determine the probability of the execution having finished (see, e.g., Fig. 7 and col. 8, line 57, to col. 9, line 32). The passage of Kalavade et al. originally referenced by the Examiner as disclosing determining F(t) (col. 10, lines 1-20) merely discloses determining the probability that the processing delay (PD) of an application exceeds a value T (see col. 9, lines 60-62).

The claims further recite "determining a probability P that the resource will complete servicing the task within an amount of time h from now as $(F(t+h)-F(t))/(1-F(t))$." Again Kalavade et al. do not make such a determination. The Examiner originally referenced col. 9, line 33, to col. 10, line 24 of Kalavade et al. as disclosing this determination. The Examiner is mistaken. Col. 9, lines 33-60, disclose computing the probability that the state of computation at a state transition jumps from one given state to another given state in a single jump. This bears no relevance to the probability determination recited in applicant's claims. And, as was already described above, col. 9, line 60, to col. 10, line 24,

merely disclose determining the probability that the processing delay of an application exceeds a value T. Again, this bears no relevance to the probability determination recited in the claims.

Finally, claims 6, 22, and 42 recite, “in response to P, scheduling another task for servicing.” There is no corresponding disclosure in Kalavade et al. Firstly, as was just shown, Kalavade et al. do not compute P. Secondly, scheduling of tasks in Kalavade et al. is based upon a selected scheduling policy (see, e.g., col. 3, lines 57-62) and not on the basis of probabilistic computations.

It should therefore be evident that Kalavade et al. do not disclose, teach, or suggest the invention recited in claims 6, 22, and 42, and claims dependent therefrom, and therefore that Kalavade et al. do not render the claims unpatentable.

With respect to claims 14, 33, 36, 50, and 53, the Examiner asserted that, “Pena-Nieves teaches the invention as claimed.” Applicant respectfully disagrees. Pena-Nieves et al. disclose a system for collecting, analyzing, and reporting reliability data. Other than disclosing the use of the Weibull distribution as a statistical tool, Pena-Nieves et al. bear no relevance to applicant’s claimed invention.

The Examiner further characterized Pena-Nieves et al. as disclosing the specific additional recitations of those claims. Applicant likewise disagrees with this characterization. But that is largely irrelevant, because even if the Examiner’s characterization of Pena-Nieves et al. were correct, the combined teachings of Kalavade et al. and Pena-Nieves et al. would still not render applicant’s claimed invention unpatentable, for the following reason.

Claims 14 and 17 depend from claim 6; claims 33 and 36 depend from claim 22; and claims 50 and 53 depend from claim 42. As was shown above, Kalavade et al. do not disclose, teach, or suggest the invention of claims 6, 22, and 42. Pena-Nieves et al. likewise do not

disclose, teach, or suggest the invention of claims 6, 22, and 42. The only relevance of Pena-Nieves et al. to the claimed invention is disclosure of statistical methods such as the Weibull distribution for analysis of data. Therefore, the combined teachings of Kalavade et al. and Pena-Nieves et al. also do not disclose the invention of claims 6, 22, and 42. As such, the two references cannot and do not render unpatentable any claims that depend from claims 6, 22, and 42.

In view of the above discussion, applicant asserts that the Section 103(a) rejections of claims 6-18 and 22-54 also are unfounded. Applicant therefore requests that these rejections be withdrawn.

The Examiner's rejections having been properly addressed and disposed of, applicant asserts that the application is now in condition for allowance. Applicant therefore requests that the application be reconsidered and thereafter be passed to issue.

Applicant believes that the foregoing is dispositive of all issues in the application. But, if the Examiner should deem that a telephone interview would advance prosecution, applicant requests the Examiner to call applicant's attorney at the telephone number listed below.

Respectfully submitted,

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